National Aeronautics and Space Administration

NOVEMBER 2016

SPACE LAUNCH SYSTEM HIGHLIGHTS

MORE HARDWARE GETS READY FOR THE PUSH, PULL AND TWIST

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NASA SLS PROPULSION SYSTEM GOES INTO MARSHALL STAND AHEAD OF BIG TEST SERIES

A test version of the SLS interim cryogenic propulsion stage (ICPS) begins the move to the west test area at NASA's Marshall Space Flight Center for integration with other SLS structures ahead of testing in early 2017.
Read the full story at: bit.ly/2gbgZzl

ICPS in the News:

NASA Marshall ready to "test like you fly" Space Launch System rocket hardware: **bit.ly/2gvN8SR**

NASA shows how close its SLS rocket is to getting a 'fatal' squeeze: **bit.ly/2gf6KYw**

SLS Structural Testing to begin soon at Marshall Space Flight Center: **bit.ly/2eZJ8tz**

SLS is gearing up to test the rocket stage that will send the Orion spacecraft beyond the moon. "This is a big step for us in getting ready for testing, and the first flight of SLS and Orion," said Steve Creech, deputy manager of the Spacecraft and Payload Integration & Evolution Office at Marshall. "Flight pieces of the hardware for the upper part of the rocket also are in production."

The ICPS structural test article is loaded into the test stand at Marshall. Two simulators and four qualification articles of the upper part of the SLS will be stacked in the stand and subjected to forces similar to those experienced in flight. The ICPS joins the core stage simulator and launch vehicle stage adapter, which were loaded into the test stand earlier this fall.

FACES OF SLS: KEITH HIGGINBOTHAM

This NASA engineer will be part of putting SLS rocket hardware under pressure! Meet Keith Higginbotham, structural test lead at NASA's Marshall Space Flight Center.

Read the full story at: bit.ly/2f2XSI8

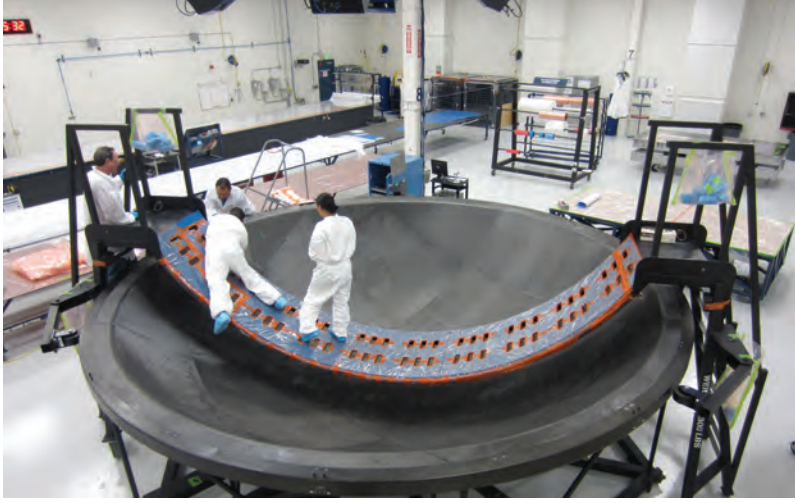
NASA ASTRONAUT 'SCHOOLS' STUDENTS ON LIVING IN SPACE

NASA astronaut Don Thomas talks to students about his adventures in space and the future of human exploration with SLS at Whitesburg Christian Academy in Huntsville, Alabama. Thomas also visited Blossomwood Elementary and Lincoln Academy in Huntsville, and Cowart Elementary in Athens, Alabama. You can bring SLS to your classroom: **bit.ly/2fZIREP**

A WHOLE LOT OF H2O

They may look like pumpkins or ammo for the world's largest water balloon fight, but these massive water bags are being used to provide test weight to prove the liquid hydrogen tank test stand hoist is capable of lifting the maximum-rated load. Each bag holds roughly 7,970 gallons of water.

‘LAYERING’ UP FOR THE FIRST FLIGHT OF NASA SLS



Technicians from Janicki Industries in Hamilton, Washington, position the layers of the diaphragm for the Orion stage adapter. The adapter will join the Orion spacecraft to the SLS ICPS. The ICPS is a liquid oxygen/liquid hydrogen-based system that will give Orion the in-space push needed to fly beyond the moon before it returns to Earth on the first flight of SLS in 2018. The adapter diaphragm is used to keep launch vehicle gases away from the spacecraft.

The diaphragm is constructed of multiple layers of carbon fiber fabric material engrained with epoxy. The layers are pieced together and carefully positioned in place using laser projectors to outline where they need to go. Janicki finished laying the final piece in late October. The diaphragm work is being done in collaboration with NASA’s Langley Research Center in Hampton, Virginia, and NASA’s Marshall Space Flight Center in Huntsville, Alabama.

SPACEFLIGHT PARTNERS:
BST Systems Inc.

LOCATION:
Plainfield, Connecticut

NUMBER OF EMPLOYEES:
42

WHAT THEY DO FOR SLS:
BST Systems in qualifying silver-zinc batteries to power the avionics and flight safety system on the SLS boosters.

ROLLING ON A RIVER: NASA's BARGE PEGASUS RETURNS TO MICHOUD

Pegasus departed Nov. 1 from NASA's Stennis Space Center in Bay St. Louis, Mississippi, and traveled on the Pearl River, arriving that night at NASA's Michoud Assembly Facility in New Orleans. The barge returned to Michoud to ship parts for SLS. The core stage, the structural backbone of the rocket that includes the large propellant tanks that fuel the rocket, is being built at Michoud. Pegasus will carry core stage structural test articles from Michoud to NASA's Marshall Space Flight Center in Huntsville, Alabama, for testing. Pegasus also will transport the assembled core stage with its four RS-25 engines from Michoud to Stennis for green run testing -- hot-fire testing to ensure the stage is ready for launch. Later, the barge will take the core stage to NASA's Kennedy Space Center in Florida for integration with other components for the first SLS flight.

FLIPPING FOR PROGRESS

Engineers at NASA's Marshall Space Flight Center recently flipped the Orion stage adapter, which will be an important piece of connector hardware for the first flight of SLS. The adapter will join the NASA's Orion Spacecraft to the rocket's ICPS. The adapter also will carry 13 CubeSats to perform science and technology investigations that will help pave the way for future human exploration in deep space, including the Journey to Mars. The flip is an important next step in evaluating the machining and drilling work on the flight hardware.

FOLLOW THE PROGRESS OF NASA'S NEW LAUNCH VEHICLE FOR DEEP SPACE:

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COMING IN DECEMBER:

Work under way on the launch vehicle stage adapter flight hardware

Wind tunnel testing for SLS Block 1B

EM-1 booster forward skirt shipped to Kennedy